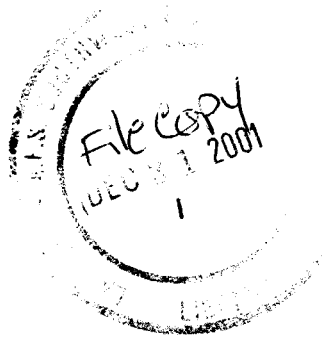


# NOAA Technical Memorandum NMFS



**NOVEMBER 2001**

## **SARDINE FISHERIES, TRADE, AND MARKET OF JAPAN**

Sunee C. Sonu

NOAA-TM-NMFS-SWR-038

**U.S. DEPARTMENT OF COMMERCE**  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Region

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## **NOAA Technical Memorandum NMFS**

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Sunee C. Sonu

Southwest Region  
National Marine Fisheries Service, NOAA  
Long Beach, California 90802

**NOAA-TM-NMFS-SWR-038**

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## EXECUTIVE SUMMARY

Japan was once the world's largest producer of sardine. Recently, however, Japanese catches of sardine have declined significantly, and Japan has become increasingly more dependent on imports.

Japan is a major market for sardine, utilizing an average of 302,000 metric tons (mt) per year during 1996-2000. Supply for this market comes from both domestic catches as well as imports. The share of the Japanese sardine market supplied by imports increased from 1 percent in 1996 to 11 percent in 2000.

The Japanese commercial fishery for sardine dates back to 1487. The catch increased rapidly from 17,000 mt in 1970 to 2.2 million mt in 1980 and reached a record of 4.5 million mt in 1988. Since 1989, however, sardine catches have steadily declined, and the catch in 2000 of 158,000 mt was less than 4 percent of the record landings, and was the lowest catch in 28 years.

Japan is a major importer of sardines. In 2000, Japanese imports of sardines were worth over \$22 million. Whole frozen fish was the dominant product form imported into Japan, representing 95 percent in volume and 79 percent in value in 2000. The United States has become the primary supplier of frozen sardine to Japan since 1996. Japanese imports of frozen sardine from the United States in 2000 were 11,434 mt valued at \$8.3 million, an increase of 2.4-fold in volume and 3-fold in value over 1999. In 2000, the United States for the first time supplied 24 mt of fresh sardine to Japan.

Prices of sardines are primarily determined by supply and demand, but quality, size, origin, and species are also important. During 1991-2000, the highest monthly average wholesale price at Tokyo Central Wholesale Market occurred in November 2000 for fresh sardine and in February 1999 for frozen sardine, which corresponded to periods of low supply of these products.

Sardine products imported into Japan are subject to import quota (IQ) and tariffs. To meet strong demand for sardines, the Japanese government increased the IQ for sardines from 20,000 mt for 1998 to 22,000 mt for 1999, and then to 50,000 mt for 2000. The tariff for fresh and frozen sardine of the genus *Sardinops* is higher (10 percent) than that for other genera (3.5 percent). Since the United States is the major supplier of fresh and frozen *Sardinops spp.* to Japan, a reduction of the tariff on this genus would be beneficial to U.S. exporters.



## INTRODUCTION

Japan, once the world's largest producer and still the major user of sardines, relies mainly on landings by her own fleet. Recently, however, dwindling domestic catches have forced Japan to increase imports of sardines.

Frozen Pacific sardine, *Sardinops sagax*, from the U.S. West Coast has found a market niche in Japan. In 2000, Japan imported \$8.3 million of frozen sardines from the United States. Presently, the United States is the principal supplier of frozen sardines to Japan, accounting for 48 percent by volume and 47 percent by value of the total Japanese imports in 2000.

The resource of Pacific sardine is abundant and appears to be increasing in the United States, mostly in California. Landings of Pacific sardine in the United States increased sharply in the mid-1990s, and should continue to grow, as long as domestic and foreign markets are available. Japan appears to be the most likely area for expansion of the market for U.S. producers.

This report provides a detailed examination of the Japanese sardine fishery, as well as its imports, exports, supply, utilization, and market, in order to identify potential opportunities for export by U.S. producers.

## WORLD FISHERIES

Sardines are important coastal pelagic fish inhabiting temperate waters throughout the world (Hiramoto 1987) and are the objects of commercial fisheries wherever they are found in abundance.

Total world landings of sardines (Japanese sardine, *Sardinops melanostictus*; Pacific sardine, *S. sagax*; Southern African sardine, *S. ocellatus*; South American sardine, *S. sagax*; and European sardine, *Sardina pilchardus*), increased from 8 million mt in 1981 to a peak of nearly 13 million mt in 1988 (Table 1). Landings have been on a downward trend thereafter, falling to less than 2.5 million mt in 1999.

Recent decreases in global landings of sardines were due mainly to sharply declined catches of Japanese and South American sardines. Combined landings of these two species declined from 11 million mt in 1988 to less than one million mt in 1999. Landings of Pacific sardine and Southern African sardine have remained fairly stable during recent years, while landings of European sardine have declined slightly.

Since 1997, European sardine has provided the greatest annual landings of sardines. In 1999, this species accounted for 37 percent of total landings compared to 21 percent for Japanese sardine, 18 percent for South American sardine, 16 percent for Pacific sardine, and 7 percent for Southern African sardine.

The near collapse of the Japanese and South American sardine resources is shown by the decline in catches of sardines in the northwest and southeast Pacific Ocean, respectively (Table 2). From 1991 to 1999, catches dropped from 3.8 million mt to 0.5 million mt in the northwest Pacific Ocean and from 4.2 million mt to 0.4 million mt in the southeast Pacific Ocean. Landings in the eastern central Atlantic Ocean also decreased from 1.1 million mt to 0.5 million mt, due mainly to a sharp drop in catches by the Russian Federation, from 310,000 mt in 1991 to 5,000 mt in 1999 (FAO 2001). Catches from other fishing areas were fairly stable during the same period.

Of 36 nations that reported sardine landings in 1999, Morocco ranked highest with 18 percent of the total (Table 3). Japan was second with 15 percent, while Chile, the world's second or third largest producer during the 1980's, was in fourth place, trailing Mexico. Harvest of sardine by Chile went from 1.6 million mt in 1981 to a record high of 2.9 million mt in 1985, then declined to 28,000 mt in 1998. This was followed by an increase to 246,000 mt in 1999. Peru, the world's largest producer of sardine in the 1990's, was in fifth place in 1999. Peru's share of the world catch has decreased sharply from 33 percent in 1998 to 8 percent in 1999. Landings by Mexico, Spain, and South Africa have remained fairly stable in recent years. Harvests by the United States increased from virtually nil in the mid-1970's to the mid-1980's, to nearly 68,000 mt in 2000 (Table 4).

Total catch of Japanese sardine by all nations reached a high of 5.4 million mt in 1988, with Japan landing 83 percent of the fish (Table 5). Substantial catches were reported by the Republic of Korea from 1927-1941 and by the U.S.S.R. in 1978-1991. Japan's share of the total catch of Japanese sardine was about 68 percent in 1999.

**Table 1. World Catches of Sardines, 1981-1999**  
(1,000 metric tons).

Year	Japanese sardine	Pacific sardine	South American sardine	Southern African sardine	European sardine	Total
1981	3,613	344	2,973	101	1,000	8,031
1982	3,966	433	3,476	89	864	8,828
1983	4,465	381	4,066	112	961	9,985
1984	5,156	278	5,735	89	914	12,172
1985	4,723	372	6,509	90	926	12,620
1986	5,191	471	4,961	88	981	11,692
1987	5,321	477	4,950	107	1,184	12,039
1988	5,429	446	5,383	105	1,366	12,729
1989	5,143	509	4,441	114	1,539	11,746
1990	4,732	314	4,254	149	1,525	10,974
1991	3,774	325	4,190	121	1,465	9,875
1992	2,489	279	3,057	134	1,164	7,123
1993	1,796	273	1,967	167	1,082	5,285
1994	1,314	301	1,746	210	1,144	4,715
1995	733	364	1,503	158	1,209	3,967
1996	431	373	1,494	106	996	3,400
1997	418	368	723	145	999	2,653
1998	296	366	937	197	941	2,737
1999	515	375	442	176	901	2,409

Sources: FAO 1992, 1999, 2000, 2001

**Table 2. World Sardine Landings by FAO Fishing Areas, 1991-1999**  
(1,000 metric tons).

FAO fishing areas	1991	1992	1993	1994	1995	1996	1997	1998	1999
Pacific ocean:									
Southeast	4,190	3,057	1,967	1,746	1,503	1,494	723	937	443
Eastern central	325	279	273	301	363	373	368	366	374
Northwest	3,774	2,489	1,796	1,314	733	431	418	296	515
Northeast	-*	-	-	-	0**	-	-	0	1
Atlantic ocean:									
Eastern central	1,073	724	612	683	779	615	648	580	533
Southeast	121	134	167	210	158	106	145	197	176
Northeast	150	183	212	190	182	157	139	154	156
Mediterranean and Black Sea	242	257	258	271	248	225	210	206	212
Total	9,875	7,123	5,285	4,715	3,967	3,400	2,653	2,737	2,409

-\* magnitude known to be nil or zero

0\*\* more than zero but less than 500 metric tons

Total may not add due to rounding

Source: FAO 2000, 2001

**Table 3. World Catches of Sardines by Major Countries, 1981-1999  
(1,000 metric tons).**

Year	Japan	Mexico	Peru	Chile	Spain	Morocco	South Africa	U.S.A.	Total
1981	3,089	344	1,183	1,628	223	234	100	0 *	8,031
1982	3,290	433	1,510	1,780	217	169	87	0	8,828
1983	3,745	381	1,172	2,823	235	229	107	0	9,985
1984	4,179	278	2,789	2,572	258	164	86	0	12,172
1985	3,866	372	2,904	2,887	228	218	87	1	12,620
1986	4,210	471	1,721	2,585	216	277	88	1	11,692
1987	4,362	477	2,469	2,203	228	275	107	2	12,039
1988	4,488	446	3,470	1,526	271	584	104	4	12,729
1989	4,099	509	2,569	1,590	254	330	112	4	11,746
1990	3,678	314	3,265	900	214	346	57	3	10,974
1991	3,010	325	3,398	734	195	371	52	8	9,875
1992	2,224	279	2,243	809	186	322	53	18	7,123
1993	1,714	273	1,462	481	220	382	51	14	5,285
1994	1,189	288	1,552	194	231	492	93	13	4,715
1995	661	321	1,266	162	225	571	115	43	3,967
1996	319	340	1,056	81	222	393	105	33	3,400
1997	284	326	625	40	231	497	117	46	2,653
1998	167	323	908	28	157	436	128	41	2,737
1999	351	314	188	246	128	430	131	60	2,409

0\* more than zero but less than 500 metric tons

Total also includes other countries

Sources: FAO 1992, 1999, 2000, 2001

Ministry of Agriculture, Forestry & Fisheries 2001

Suisan Tsushin Sha April 25, 2001

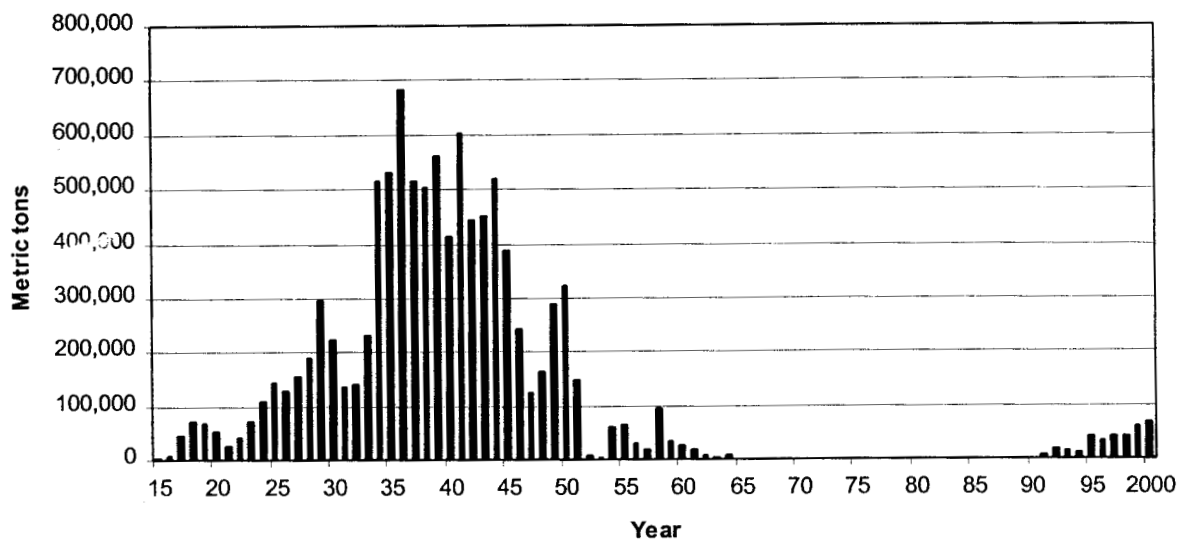
California Department of Fish and Game 2000

## U.S. FISHERY

Pacific sardine is found in Mexico in the Gulf of California and along the western coast of Baja California, and in the United States from California to southeastern Alaska (Gates 1960). Pacific sardine supported the largest fishery in the western hemisphere during the 1930's and early 1940's, when it represented nearly 25 percent of all fish caught in the United States. Over 500,000 mt of sardine were netted in U.S. waters in eight different years (Figure 1 and Table 4).

Beginning in the mid-1940's sardine landings declined dramatically, with some short term recoveries, and the fishery finally collapsed in the early 1960's.

In 1967, the California legislature placed a moratorium on the directed fishery for sardine in California (Pacific Fishery Management Council 1998). The moratorium was lifted in 1986 as the population increased, and a directed fishery quota of 908 mt was established for the years 1986-1990. Total estimated sardine stock biomass of fish over one year old (age 1+) increased dramatically from 5,056 mt in 1983 to 1,182,465 mt in 2000 (Conser et al. 2000). Consequently the annual quota has been increased in recent years, from 43,545 mt in 1998 to 134,737 mt in 2001. The fishery continued to expand, and the landings for 2000 were 67,890 mt, the highest since 1959. The majority of the sardine landings occurred in southern California. Currently, the U.S. fishery is regulated under a quota system.



**Figure 1. United States Landings of Pacific Sardine, 1915-2000 (metric tons).**

**Table 4. United States Landings of Pacific Sardine, 1915-2000  
(metric tons).**

Year	Metric tons	Year	Metric tons
1915	1,991	1961	19,581
1916	7,098	1962	6,969
1917	47,221	1963	3,235
1918	72,872	1964	5,959
1919	69,798	1965	873
1920	53,761		
1921	26,913	1966	398
1922	41,783	1967	68
1923	72,211	1968	56
1924	110,082	1969	48
1925	143,017	1970	201
1926	130,065	1971	135
1927	155,255	1972	169
1928	190,633	1973	69
1929	295,642	1974	6
1930	224,282	1975	2
1931	136,172	1976	7
1932	141,600	1977	2
1933	231,243	1978	1
1934	515,268	1979	9
1935	529,898	1980	21
1936	681,438	1981	15
1937	516,876	1982	2
1938	503,675	1983	1
1939	562,903	1984	1
1940	414,562	1985	6
1941	602,548	1986	389
1942	442,112	1987	439
1943	452,236	1988	1,188
1944	520,410	1989	837
1945	385,544	1990	1,664
1946	240,857	1991	7,587
1947	123,485	1992	17,954
1948	162,264	1993	15,347
1949	287,372	1994	11,644
1950	324,105	1995	40,256
1951	149,186	1996	32,553
1952	6,500	1997	42,884
1953	4,295	1998	43,312
1954	61,918	1999	60,129
1955	66,047	2000	67,890
1956	31,550		
1957	20,803		
1958	94,097		
1959	33,733		
1960	26,097		

Sources: Lyles 1965  
U.S. Department of Commerce 2001  
Pacific Fishery Management Council 2001

**Table 5. World Landings of Japanese Sardine by Country,  
1910-1999 (1,000 metric tons).**

Year	Japan	Korea, Rep.	U.S.S.R/ Russian, Fed	China, main	Korea, D.P.Rp	World total
1910	132	...*	...	...	...	132
1911	128	...	...	...	...	128
1912	146	...	...	...	...	146
1913	172	24	...	...	...	196
1914	210	39	...	...	...	249
1915	231	71	...	...	...	302
1916	235	...	...	...	...	235
1917	370	67	...	...	...	437
1918	252	...	...	...	...	252
1919	264	74	...	...	...	338
1920	345	...	...	...	...	345
1921	294	72	...	...	...	366
1922	314	67	...	...	...	381
1923	406	74	...	...	...	480
1924	423	71	...	...	...	494
1925	488	99	...	...	...	587
1926	429	146	...	...	...	575
1927	517	271	...	...	...	788
1928	573	307	...	...	...	880
1929	675	390	...	...	...	1,065
1930	690	332	60	...	...	1,082
1931	954	398	90	...	...	1,442
1932	1,097	314	90	...	...	1,501
1933	1,481	272	90	...	...	1,843
1934	1,385	628	100	...	...	2,113
1935	1,807	835	120	...	...	2,262
1936	1,586	1,025	110	...	...	2,721
1937	1,145	1,423	140	...	...	2,708
1938	989	1,017	100	...	...	2,106
1939	999	1,238	110	...	...	2,343
1940	754	1,002	100	...	...	1,856
1941	1,089	667	20	...	...	1,776
1942	685	70	0**	...	...	775
1943	461	...	...	...	...	461
1944	250	...	...	...	...	250
1945	155	...	...	...	...	155
1946	241	...	...	...	...	241
1947	240	...	...	...	...	240
1948	247	...	...	...	...	247
1949	329	...	...	...	...	329
1950	381	...	...	...	...	381



**Table 5 (Continued). World Landings of Japanese Sardine by  
Country, 1910-1999 (1,000 metric tons)**

Year	Japan	Korea, Rep.	U.S.S.R/ Russian, Fed	China, main	Korea, D.P.Rp	World total
1951	368	...	...	...	...	368
1952	258	...	...	...	...	258
1953	344	0	...	...	...	344
1954	246	0	...	...	...	246
1955	211	...	...	...	...	211
1956	206	...	...	...	...	206
1957	212	...	...	...	...	212
1958	137	...	...	...	...	137
1959	120	...	...	...	...	120
1960	78	...	...	...	...	78
1961	127	...	...	...	...	127
1962	108	0	...	...	...	108
1963	56	...	...	...	...	56
1964	16	0	...	...	...	16
1965	9	0	...	...	...	9
1966	13	...	...	...	...	13
1967	17	0	...	...	...	17
1968	24	0	...	...	...	24
1969	21	0	...	...	...	21
1970	17	0	...	...	...	17
1971	57	0	...	...	...	57
1972	58	0	...	...	...	58
1973	297	4	...	...	...	301
1974	352	0	...	...	...	352
1975	526	4	-***	...	...	530
1976	1,066	11	-	...	...	1,077
1977	1,420	50	-	...	...	1,470
1978	1,637	54	243	...	...	1,934
1979	1,817	47	369	...	...	2,233
1980	2,198	38	359	...	...	2,595
1981	3,089	63	461	...	...	3,613
1982	3,290	82	594	...	...	3,966
1983	3,745	140	580	...	...	4,465
1984	4,179	178	799	...	...	5,156
1985	3,866	108	748	...	...	4,723
1986	4,210	161	821	...	...	5,191
1987	4,362	194	765	...	...	5,321
1988	4,488	146	795	...	...	5,429
1989	4,099	183	861	...	...	5,143
1990	3,678	133	879	42	...	4,732

**Table 5 (continued). World Landings of Japanese Sardine by Country, 1910-1999 (1,000 metric tons)**

Year	Japan	Korea, Rep.	U.S.S.R/ Russian, Fed	China, main	Korea, D.P.Rp	World total
1991	3,010	45	656	63	...	3,774
1992	2,224	47	165	53	...	2,489
1993	1,714	31	4	47	...	1,796
1994	1,189	37	0	68	20	1,314
1995	661	14	-	58	0	733
1996	319	19	-	93	0	431
1997	284	9	-	125	0	418
1998	167	8	-	121	...	296
1999	351	17	0	147	...	515

...\* data not available

0\*\* more than zero but less than 500 metric tons

-\*\*\* magnitude known to be nil or zero

Totals may not add due to rounding of data

Sources: Ministry of Agriculture, Forestry & Fisheries 1972,  
1990, 2000

FAO 1973, 1977, 1979, 1981, 1992, 1999, 2001

Chikuni, S., 1985

### **JAPANESE FISHERY**

The Japanese commercial fishery for Japanese sardine dates back to 1487 (Itoh 1961). Originally, sardines were taken by beach seines, fish traps, and gillnets for human consumption (Itoh 1987).

### **Species**

The Japanese sardine is a pelagic marine schooling fish inhabiting temperate waters of the Far East (Hiramoto 1987). The annual catch of this species was at times the greatest among all fish landed in the world (FAO 1950). It is closely allied to three other species of sardines of the same genus: Pacific sardine, South American sardine and Southern African sardine (Whitehead 1985). Genetic differences among the four sardine species are not significant (ibid).

### **Distribution**

Population size of sardine affects its distribution range (Kondo 1980). During periods of high abundance, fishing grounds

for Japanese sardine are widely scattered throughout the Far East, including the Coast Range and South Sakhalin in Russia, the Japan Sea coast of the Korean Peninsula, and the seas surrounding Japan. When abundance is low, the range gradually withdraws first from the northern limits, and then away from the Coast Range and South Sakhalin in Russia, and then from northern Korea. The coastal waters around Japan constitute the main fishing grounds for Japanese sardine.

### **Catch Trends**

The Japanese sardine exhibits a repeating long-term fluctuation in its stock abundance (Itoh 1961). The volume of sardine landings have gone through several long-term cycles of high and low levels since the 17<sup>th</sup> century. In the 20<sup>th</sup> century, a peak in catch occurred in the 1930's, followed by a rapid decline in the 1940's and a low level period in the 1950's and 1960's (Fig. 2 and Table 6). In the mid-1970's the catch increased remarkably and a high level was maintained into the early 1990's, with a peak in 1988. The Japanese catch has declined to well below a million mt after 1994.

There have been many studies on causes of the long term fluctuations in Japanese sardine populations. The fluctuations are thought to be related to several factors including predation (Itoh 1987), species replacement (Kishida et al. 1998; Fukushima et al. 1988; Matsuda et al. 1992), food density (Kishida et al. 1998; Matsuda et al. 1991), and the physical and biological oceanographic environments (Kondo 1980; Wada et al. 1998; Noto et al. 1999; Yasuda et al. 1999). However, the proposed causes for fluctuations in the sardine population remain controversial due to scarcity of key biological data over a long period (Itoh 1987 and Kawasaki 1995).

Periodic appearance of a dominant species among coastal pelagic species appears to occur in Japanese waters. Peak catches were made in 1935 and 1988 for Japanese sardine, in 1958 for Pacific saury (*Cololabis saira*), and in 1974 for chub mackerel (*Scomber japonicus*; Table 6). Landings of coastal pelagic species in 2000 were dominated by anchovy (*Engraulis japonicus*), followed by Japanese flying squid (*Todarodes pacificus*), chub mackerel, and Pacific saury. Harvest of sardine for 2000 was the smallest among five major coastal pelagic species.

### **Catch by Fishery**

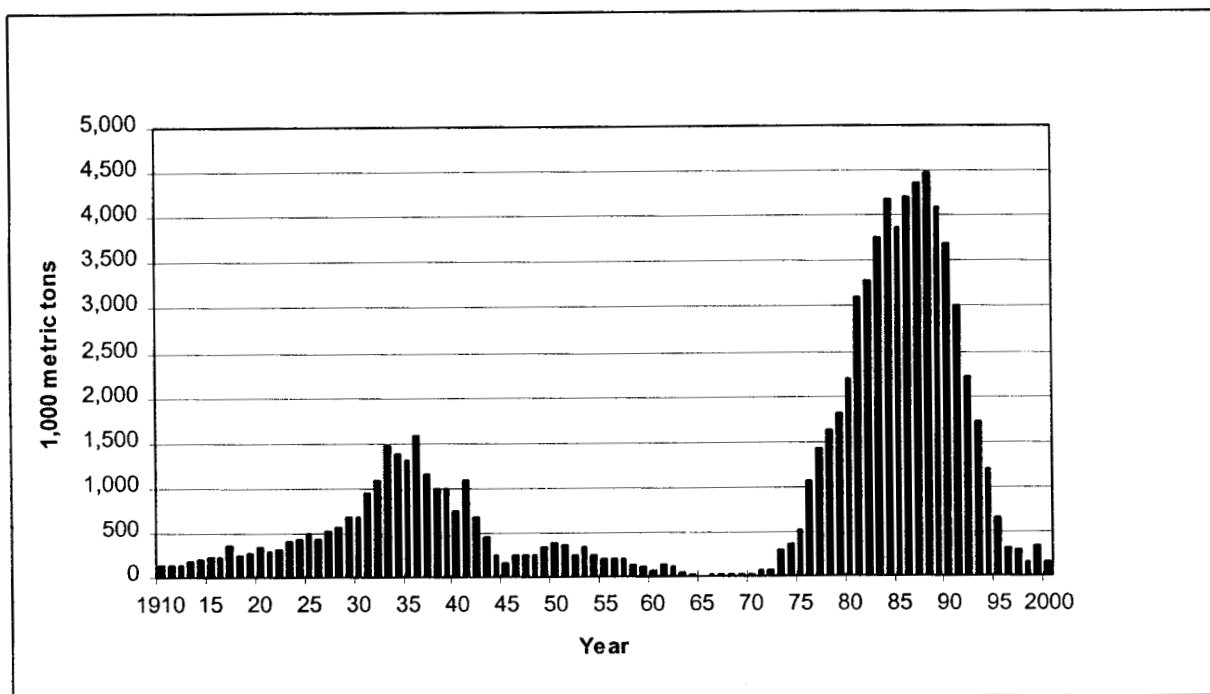
Among fishing methods used to catch sardines are purse seine, set net, beach and boat seine, gillnet, and lift net (Table 7). None of these methods is used exclusively for sardines, but historically beach seine, fish trap, and gillnet

were mainly used to catch sardine (Itoh 1987). In 1881, purse seine technology was introduced into Japan and purse seines were first used to catch sardine in 1889 (Agriculture and Forestry Research Center 1965). Between 1995 and 1999, about 90 percent of the sardine catch was made by purse seine, and the rest by set net, beach and boat seine, gillnet, and lift net.

### **Total Allowable Catch**

In January 1997, Japan began implementing total allowable catch (TAC) levels for several species including Japanese sardine, Pacific saury, Alaska pollock, jack mackerel, chub mackerel, Tanner crab, and Japanese flying squid (Ministry of Agriculture, Forestry, and Fisheries 1999). The TAC is set by the Ministry of Agriculture, Forestry, and Fisheries together with prefectural governments (Ministry of Agriculture, Forestry, and Fisheries 1998).

The TAC for sardine was initially set at 720,000 mt in 1997, but due to low catches and abundance, it was decreased to 380,000 mt in 2001 (Table 8). Only about 42 percent of the 2000 TAC was landed.



**Figure 2. Japanese Landings of Japanese sardine, 1910-2000 (1,000 metric ton)**

**Table 6. Japanese Landings of Major Coastal Pelagic Species,  
1912-2000 (1,000 metric tons)**

Year	Sardine	Anchovy	Chub mackerel	Pacific saury	Japanese flying squid	Marine fishes Total
1912	146	105	34	60	--*	1,622
1913	172	97	34	35	--	1,943
1914	210	107	37	19	--	1,947
1915	231	95	40	25	--	1,999
1916	235	122	47	24	--	2,171
1917	370	88	50	18	--	1,932
1918	252	84	59	6	--	1,806
1919	264	122	55	8	--	2,205
1920	345	113	50	14	--	2,433
1921	294	90	53	22	--	2,128
1922	314	89	54	27	--	2,403
1923	406	100	67	22	--	2,435
1924	423	94	68	34	--	2,579
1925	488	92	76	64	--	2,794
1926	429	99	71	38	--	3,020
1927	517	91	90	41	--	3,191
1928	573	103	82	27	--	3,038
1929	675	92	77	22	--	3,067
1930	690	99	72	21	--	3,135
1931	954	81	82	15	--	3,308
1932	1,097	60	83	12	--	3,491
1933	1,481	44	110	17	--	3,996
1934	1,385	82	106	17	--	4,177
1935	1,807	71	114	17	--	3,863
1936	1,586	42	126	27	--	4,217
1937	1,145	63	132	23	--	3,927
1938	989	95	133	25	--	3,580
1939	999	92	154	20	--	3,583
1940	754	112	122	27	--	3,427
1941	1,089	110	143	14	--	3,702
1942	685	176	105	16	--	3,480
1943	461	126	133	17	--	3,236
1944	250	121	72	3	--	2,375
1945	155	105	84	3	--	1,750
1946	241	118	64	10	--	2,075
1947	240	109	63	23	--	2,257
1948	247	128	99	66	--	2,477
1949	329	144	138	64	--	2,666
1950	381	182	188	126	--	3,255
1951	368	276	151	113	596	3,774
1952	258	286	287	226	596	4,646
1953	344	243	235	254	420	4,387
1954	246	304	297	293	399	4,304
1955	211	392	244	497	383	4,658
1956	206	347	266	328	299	4,488
1957	212	430	276	422	364	5,067
1958	137	417	268	575	354	5,198
1959	120	356	295	523	481	5,568
1960	78	349	351	287	481	5,817

**Table 6 (Continued). Japanese Landings of Major Coastal Pelagic Species, 1912-2000 (1,000 metric tons)**

Year	Sardine	Anchovy	Chub mackerel	Pacific Saury	Japanese flying squid	Marine fishes Total
1961	127	367	338	474	384	6,287
1962	108	349	409	483	536	6,397
1963	56	321	465	385	590	6,200
1964	16	296	496	211	238	5,868
1965	9	406	669	231	397	6,382
1966	13	408	624	242	383	6,558
1967	17	365	687	220	477	7,241
1968	24	358	1,015	140	668	7,993
1969	21	377	1,011	63	478	7,976
1970	17	365	1,302	93	412	8,598
1971	57	351	1,254	190	364	9,149
1972	58	370	1,190	197	464	9,400
1973	297	335	1,135	406	348	9,793
1974	352	288	1,331	135	335	9,749
1975	526	245	1,318	222	385	9,753
1976	1,066	217	977	105	312	9,605
1977	1,420	246	1,355	253	264	9,688
1978	1,637	152	1,626	360	199	9,683
1979	1,817	135	1,414	278	213	9,477
1980	2,198	151	1,301	187	331	9,909
1981	3,089	160	908	160	197	10,143
1982	3,290	197	718	207	182	10,231
1983	3,745	208	805	240	192	10,697
1984	4,179	224	814	210	174	11,501
1985	3,866	206	773	246	133	10,877
1986	4,210	221	945	217	91	11,341
1987	4,362	141	701	197	183	11,129
1988	4,488	177	649	292	156	11,259
1989	4,099	182	527	247	212	10,440
1990	3,678	311	273	308	209	9,570
1991	3,010	329	255	304	242	8,511
1992	2,224	301	269	266	394	7,771
1993	1,714	195	665	277	316	7,256
1994	1,189	188	633	262	302	6,590
1995	661	252	470	274	290	6,007
1996	319	346	760	229	444	5,974
1997	284	233	849	291	366	5,985
1998	167	471	511	145	181	5,315
1999	351	484	382	141	237	5,239
2000	158	374	333	221	339	4,995

--\* data not available

Sources: Ministry of Agriculture, Forestry & Fisheries 1972,  
1990, 2001

Chikuni, S., 1985

Suisan Tsushin Sha April 25, 2001

**Table 7. Japanese Landings of Japanese sardine by Type of Fishery, 1995-1999 (metric tons)**

Type of fishery	1995	1996	1997	1998	1999
Purse seine	602,912	276,525	256,371	141,116	326,531
Set net	41,633	30,684	17,928	17,060	18,715
Beach and boat seines	5,687	5,613	3,466	4,357	1,964
Gillnet	221	1,152	3,448	2,701	854
Lift net	9,934	4,841	2,224	1,347	2,325
Others	1,004	539	617	492	818
Total	661,391	319,354	284,054	167,073	351,207

Source: Ministry of Agriculture, Forestry, and Fisheries 2001

**Table 8. Total Allowable Catch (TAC) and Actual Landings of Japanese Sardine, 1997-2001.**

Year	TAC (1,000 metric tons)	Landings	Percent of TAC
1997	720	284	39
1998	520	167	32
1999	400	351	88
2000	380	158	42
2001	380		

Sources: Suisan Tsushin Sha 2000, 2001  
Ministry of Agriculture, Forestry and Fisheries 2000, 2001  
Minato Shinbun Sha 2000

## IMPORTS

Because of high demand and poor domestic catches of sardine, Japan increased imports from 273 mt valued at \$1.3 million in 1989 to 25,206 mt valued at over \$22 million in 2000 (Tables 9 and 10). The number of countries supplying sardines to Japan also increased, from 12 in 1989 to 23 in 2000 (Japan Marine Products Importers Association 1990 and 2001).

Whole frozen fish was the dominant product form of sardine imported into Japan in recent years, representing as much as 95 percent in volume and 79 percent in value in 2000. Prepared and preserved products accounted for 4 percent in volume and 12 percent in value, followed by products in airtight containers with less than 1 percent in volume and 9 percent in value. Imports of fresh sardine were minor, with less than 1 percent both in volume and value in 2000.

While Japan did not import frozen sardine until 1989, a sharp increase in imports of frozen sardine into Japan has been particularly pronounced since 1995. In 1989 only two nations supplied frozen sardines to Japan, but the number increased to 15 in 2000 (Japan Marine Products Importers Association 1990 and 2001).

Japan began importing frozen sardine from the United States in 1995 (Tables 11-14). Imports have since steadily increased and the trend has been accentuated in recent years. From 1995 to 2000, imports of frozen sardine from the United States into Japan increased about 16 times in volume and 20 times in value. The United States has been the major supplier of frozen sardine to Japan since 1996, providing Japan with 48 percent in volume and 47 percent in value of frozen sardine in 2000. Significant quantities have also been imported from Mexico, the Netherlands, Canada, Ireland, and South Africa. In 2000, South Africa for the first time emerged as a significant supplier of frozen sardines to Japan.

Imports of sardine products in airtight containers more than doubled from 1989 to 2000 (Tables 15 and 16). Norway has consistently been the leading supplier of sardine products in airtight containers to Japan, providing 46 percent in volume and 72 percent in value of the 2000 total. The United Kingdom was a distant second with exports comprising 13 percent in volume and 10 percent in value of the total.

Japanese imports of prepared and preserved sardine products increased over nine times in volume and six times in value from 1989 to 2000 (Tables 17 and 18). The products came mostly from China, with lesser quantities imported from Thailand, Indonesia, and Taiwan.



Japan imported 49 mt of fresh sardines in 2000, 24 mt from the United States and 25 mt from Canada. Previously, in 1994, Japan imported 23 mt of fresh sardine from Sweden (Tables 9 and 10; Japan Marine Products Importers Association 1990-2001).

### **Trade barriers**

Japan regulates imports of sardine products with import quotas (IQ) and tariffs. Import quotas are set once a year, with new quotas announced each year on September 1 (U.S. Embassy 2001). To meet strong demand, the Japanese government increased the IQ for sardines from 20,000 mt for 1998 to 22,000 mt for 1999, and then to 50,000 mt for 2000 (Susan Keizai Sha July 29, 1998 and U.S. Embassy 2001).

Imports of nine product forms of sardine are subject to tariffs. These are: live; fresh; frozen; dried; fresh fillet; frozen fillet; dried fillet; prepared or preserved; and products in airtight containers. As the United States and Japan are signatories to the World Trade Organization (WTO), WTO tariffs apply to U.S. exports of sardine products: 10 percent for live, fresh, or frozen round, and fresh or frozen fillets; 15 percent for dried fillets or dried round; and 9.6 percent for prepared or preserved, including those in airtight containers (Japan Marine Products Importers Association 2001).

The tariff for fresh and frozen sardine of the genus *Sardinops* is higher (10 percent) than that for other genera (3.5 percent). The tariff on other genera was progressively reduced under General Agreement on Tariffs and Trade (GATT) multilateral trade negotiation rounds, from 10 percent in 1993 to 3.5 percent in 2000 (Japan Marine Products Importers Association 1994 and 2001).

Tariff rates are calculated as percentage of cost, insurance, and freight (CIF) value. Japanese importers with IQs for sardine products are listed in Appendix 1.

**Table 9. Japanese Imports of Sardines by Volume and Product Form, 1989-2000 (metric tons).**

Year	----- Frozen----- <i>Sardinops spp.</i>	Others	Sub-total	Fresh	In air-tight containers	Prepared/ preserved	Grand total
1989	24	30	54	-*	123	96	273
1990	141	150	291	-	114	412	817
1991	129	44	173	-	120	335	628
1992	24	-	24	-	207	156	387
1993	48	114	162	-	180	267	609
1994	0**	144	144	23	218	271	656
1995	6,955	1,030	7,985	-	196	173	8,354
1996	4,054	117	4,171	-	157	202	4,530
1997	4,292	527	4,819	-	220	98	5,137
1998	3,757	731	4,488	-	231	142	4,861
1999	6,520	2,076	8,596	-	255	467	9,318
2000	21,096	2,868	23,964	49	276	917	25,206

-\* no imports

0\*\* more than zero but less than 500 metric tons

Sources: Japan Marine Products Importers Association 1990-2001

**Table 10. Japanese Imports of Sardines by Value and Product Form, 1989-2000 (U.S. \$1,000).**

Year	----- Frozen----- <i>Sardinops spp.</i>	Others	Sub-total	Fresh	In air-tight containers	Prepared/ preserved	Grand total
1989	20	50	70	-*	866	395	1,331
1990	117	247	364	-	829	3,019	4,212
1991	122	90	212	-	920	2,508	3,640
1992	23	-	23	-	1,592	1,226	2,841
1993	47	99	146	-	1,188	2,354	3,688
1994	3	126	129	21	1,635	2,004	3,789
1995	3,594	636	4,230	-	1,528	1,519	7,277
1996	2,722	101	2,823	-	1,118	1,658	5,599
1997	3,028	527	3,555	-	1,599	847	6,001
1998	2,272	666	2,938	-	1,711	587	5,236
1999	4,187	1,595	5,782	-	2,074	1,373	9,229
2000	15,157	2,333	17,490	53	2,010	2,584	22,137

-\* no imports

Sources: Japan Marine Products Importers Association 1990-2001

**Table 11. Japanese Imports of Frozen Sardines (*Sardinops spp.*)  
by Country of Origin and Volume, 1989-2000  
(metric tons).**

Country of origin	1989	1990	1991	1992	1993	1994
Taiwan	-*	-	-	-	-	0**
Chile	24	141	128	24	48	-
Thailand	-	-	1	-	-	-
Total	24	141	129	24	48	0

Country of origin	1995	1996	1997	1998	1999	2000
U.S.A.	728	1,607	2,279	2,424	4,751	11,175
Mexico	206	842	955	950	1,325	8,122
Canada	-	-	-	60	230	730
S. Africa	-	-	-	-	23	469
China	-	-	25	92	105	193
Chile	-	-	-	-	-	106
Peru	-	-	745	103	-	96
Korea, Rep. of	-	-	50	83	18	78
Indonesia	-	-	-	-	21	76
Namibia	-	-	-	-	-	39
Thailand	-	-	-	-	-	10
Netherlands	-	75	83	45	49	-
Morocco	6,021	1,530	23	-	-	-
Mauritania	-	-	132	-	-	-
Total	6,955	4,054	4,292	3,757	6,520	21,096

-\* no imports

0\*\* more than zero but less than 500 metric tons

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

**Table 12. Japanese Imports of Frozen Sardines (*Sardinops spp.*)  
by Country of Origin and Value, 1989-2000  
(U.S. \$1,000) .**

Country of origin	1989	1990	1991	1992	1993	1994
Taiwan	-*	-	-	-	-	3
Chile	20	117	118	23	47	-
Thailand	-	-	4	-	-	-
Total	20	117	122	23	47	3

Country of origin	1995	1996	1997	1998	1999	2000
U.S.A.	414	1,152	1,483	1,204	2,787	7,946
Mexico	152	724	775	715	898	5,115
Canada	-	-	-	58	286	921
S. Africa	-	-	-	-	22	371
China	-	-	15	84	103	357
Indonesia	-	-	-	-	45	149
Chile	-	-	-	-	-	98
Peru	-	-	566	78	-	81
Korea, Rep. of	-	-	32	100	9	60
Namibia	-	-	-	-	-	41
Thailand	-	-	-	-	-	16
Netherlands	-	42	57	32	38	-
Morocco	3,028	803	17	-	-	-
Mauritania	-	-	84	-	-	-
Total	3,594	2,722	3,028	2,272	4,187	15,157

-\* no imports

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

**Table 13. Japanese Imports of Frozen Other Sardines (excluding *Sardinops spp.*) by Country of Origin and Volume, 1989-2000 (metric tons).**

Country of origin	1989	1990	1991	1992	1993	1994
Thailand	30	150	37	-	-	10
U.S.A.	-*	-	7	-	-	-
Malaysia	-	-	-	-	2	2
Norway	-	-	-	-	-	25
United Kingdom	-	-	-	-	24	62
Netherlands	-	-	-	-	-	46
Ireland	-	-	-	-	88	-
Total	30	150	44	-	114	144

Country of origin	1995	1996	1997	1998	1999	2000
Thailand	15	-	-	-	-	-
Norway	943	-	-	-	28	-
Mexico	72	73	254	227	-	-
China	-	4	30	13	49	122
Ireland	-	22	153	127	105	518
U.S.A.	-	18	65	-	-	259
Korea, Rep. of	-	-	8	-	-	-
Netherlands	-	-	17	359	1,894	1,563
France	-	-	-	-	-	286
Poland	-	-	-	5	-	-
Taiwan	-	-	-	-	-	0**
S. Africa	-	-	-	-	-	120
Total	1,030	117	527	731	2,076	2,868

-\* no imports

0\*\* more than zero but less than 500 metric tons

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

**Table 14. Japanese Imports of Frozen Other Sardine (excluding *Sardinops spp.*) by Country of Origin and Value, 1989-2000 (U.S. \$1,000).**

Country of origin	1989	1990	1991	1992	1993	1994
Thailand	50	247	69	-	-	9
U.S.A.	-*	-	21	-	-	-
Malaysia	-	-	-	-	3	2
Norway	-	-	-	-	-	22
United Kingdom	-	-	-	-	24	54
Netherlands	-	-	-	-	-	38
Ireland	-	-	-	-	71	-
Total	50	247	90	-	99	126

Country of origin	1995	1996	1997	1998	1999	2000
Thailand	34	-	-	-	-	-
Norway	543	-	-	-	20	-
Mexico	60	68	212	188	-	-
China	-	5	21	7	29	55
Ireland	-	20	223	119	94	445
U.S.A.	-	8	46	-	-	310
Korea, Rep. of	-	-	7	-	-	-
Netherlands	-	-	18	349	1,452	1,198
France	-	-	-	-	-	226
Poland	-	-	-	3	-	-
Taiwan	-	-	-	-	-	5
S. Africa	-	-	-	-	-	94
Total	636	101	527	666	1,595	2,333

-\* no imports

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

**Table 15. Japanese Imports of Sardines, in Airtight Containers  
by Country of Origin and Volume, 1989-2000  
(metric tons).**

Country of origin	1989	1990	1991	1992	1993	1994
China	-*	-	3	-	-	0
Thailand	4	24	18	45	46	26
Malaysia	-	-	-	-	1	3
Norway	108	78	88	136	108	147
Denmark	-	-	1	1	1	1
United Kingdom	1	0	-	-	-	-
France	0**	1	0	-	1	-
Portugal	4	7	9	9	10	9
Spain	-	1	-	1	-	2
U.S.A.	-	-	-	-	0	8
Italy	1	-	1	1	-	-
Brazil	-	-	-	13	13	23
Morocco	-	-	-	-	0	-
Canada	5	3	-	-	-	-
<b>Total</b>	<b>123</b>	<b>114</b>	<b>120</b>	<b>207</b>	<b>180</b>	<b>218</b>

Country of origin	1995	1996	1997	1998	1999	2000
Korea, Rep. of	-	-	-	1	-	-
Taiwan	-	1	-	-	-	-
Thailand	49	20	15	15	21	33
Malaysia	1	1	1	1	-	-
Philippine	-	6	11	11	12	13
Norway	114	58	109	131	134	127
Denmark	-	1	1	-	-	-
United Kingdom	12	26	21	25	33	35
France	1	-	-	1	1	7
Portugal	8	15	9	15	8	28
Spain	-	2	1	-	4	1
Italy	2	2	4	3	5	2
Greece	-	-	-	-	0	-
Bulgaria	-	-	-	-	8	-
Croatia	-	-	-	-	4	7
U.S.A.	-	6	-	-	0	-
Brazil	8	19	45	28	22	23
Morocco	1	-	3	-	3	-
Australia	-	-	-	-	2	-
<b>Total</b>	<b>196</b>	<b>157</b>	<b>220</b>	<b>231</b>	<b>255</b>	<b>276</b>

-\* no imports

0\*\* more than zero but less than 500 metric tons

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

**Table 16. Japanese Imports of Sardines, in Airtight Containers by Country of Origin and Value, 1989-2000 (U.S. \$1,000).**

Country of origin	1989	1990	1991	1992	1993	1994
China	-*		12	-	-	2
Thailand	8	35	26	68	76	73
Malaysia	-	-	-	-	3	12
Norway	795	731	833	1,404	980	1,364
Denmark	-	-	5	5	2	4
United Kingdom	7	2	-	-	-	-
France	2	8	2	-	24	-
Portugal	13	23	34	45	50	49
Spain	-	11	-	3	-	26
U.S.A.	-	-	-	-	2	30
Italy	7	-	8	16	-	-
Brazil	-	-	-	52	47	75
Morocco	-	-	-	-	3	-
Canada	36	19	-	-	-	-
Total	866	829	920	1,592	1,188	1,635

Country of origin	1995	1996	1997	1998	1999	2000
Korea, Rep. of	-	-	-	4	-	-
Taiwan	-	3	-	-	-	-
Thailand	57	37	28	21	31	59
Malaysia	2	2	5	2	-	-
Philippines	-	12	11	39	88	19
Norway	1,242	664	1,106	1,275	1,447	1,439
Denmark	-	3	6	-	-	-
United Kingdom	79	162	132	161	203	203
France	10	-	-	12	11	65
Portugal	48	79	40	60	36	79
Spain	-	26	18	-	24	16
Italy	26	27	36	24	43	15
Greece	-	-	-	-	2	-
Bulgaria	-	-	-	-	48	-
Croatia	-	-	-	-	17	27
U.S.A.	-	19	-	-	2	-
Brazil	38	84	196	113	82	88
Morocco	24	-	22	-	21	-
Australia	-	-	-	-	19	-
Total	1,528	1,118	1,599	1,711	2,074	2,010

-\* no imports

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001



**Table 17. Japanese Imports of Prepared or Preserved Sardines by Country of Origin and Volume, 1989-2000 (metric tons).**

Country of origin	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Korea, Rep. of	9	114	42	63	34	56	21	52	35	11	4	-
China	1	57	155	9	57	13	63	56	-	51	386	712
Taiwan	28	31	19	0**	-	-	-	-	7	54	8	17
Hong Kong	-*	-	4	-	-	-	-	-	-	-	-	-
Thailand	-	2	4	19	16	147	48	54	48	-	-	109
Malaysia	59	-	4	-	-	1	19	16	1	3	17	-
Philippines	-	-	1	-	1	-	-	14	3	-	-	2
Indonesia	-	206	106	65	160	53	22	10	4	22	52	76
India	-	3	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	0	0	0
Total	96	412	335	156	267	271	173	202	98	142	467	917

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**Table 18. Japanese Imports of Prepared or Preserved Sardines by Country of Origin and Value, 1989-2000 (U.S. \$1,000).**

Country of origin	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Korea, Rep. of	63	1,028	487	724	429	824	343	619	456	92	13	-
China	2	240	774	37	295	82	562	411	-	110	957	1,927
Taiwan	177	321	247	3	-	-	-	-	80	303	59	116
Hong Kong	-	-	30	-	-	-	-	-	-	-	-	-
Thailand	-	7	15	54	114	456	275	310	276	-	-	259
Malaysia	152	-	17	-	-	4	114	92	5	16	189	-
Philippines	-	-	7	-	4	-	-	105	20	-	-	3
Indonesia	-	1,403	932	409	1,511	639	225	120	10	61	149	273
India	-	20	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	4	5	4
Total	395	3,019	2,508	1,226	2,354	2,004	1,519	1,658	847	587	1,373	2,584

-\* no imports 0\*\* more than zero but less than 500

Total may not add due to rounding

Sources: Japan Marine Products Importers Association 1990-2001

## EXPORTS

Japanese exports of sardine products from 1996 through 2000 are summarized in Tables 19 and 20. In 2000, Japan exported 3,464 mt, amounting to \$5 million for all sardine products, a decrease of 63 percent in volume and 41 percent in value from the 1999 level. Much of the decrease in volume was due to lower exports of frozen sardine. Canned sardine was the most valuable export product, worth \$3 million, followed by frozen (\$1.9 million) and prepared products (\$0.2 million).

Japanese exports of frozen sardine in 2000 decreased 70 percent in volume and 64 percent in value from the 1999 level. The Republic of Korea was the major market taking 34 percent in volume and 27 percent in value of Japanese frozen sardine exports in 2000 (Ministry of Finance 2001). Other important buyers in 2000 were Australia (505 mt), China (367 mt), American Samoa (203 mt) and Guam (129 mt).

Exports of canned sardine in tomato sauce in 2000 also showed a decrease from 1999. Hong Kong was by far the largest market purchasing 66 percent in volume and 68 percent in value of Japanese exports of this product (Ministry of Finance 2001). Other important buyers for canned sardine in tomato sauce in 2000 were Singapore (106 mt) and Canada (94 mt). Japanese exports of sardine canned in water and in other packs are minor. New Caledonia and Guam were the only markets for sardine canned in water in 2000. The main markets for sardine canned in other packs in 2000 were Taiwan (3 mt), New Caledonia (2 mt), and Micronesia (1 mt).

The few exports of prepared or preserved products in 2000 increased substantially from the previous year. The major buyer in 2000 was New Caledonia (8 mt; Ministry of Finance 1997-2001). The Republic of Korea purchased 6 mt of prepared sardine products in 2000. This was a notable increase from the 1999 purchase of 0.5 mt of this product. Other markets in 2000 were Taiwan (4 mt), and the United States (3 mt).

**Table 19. Japanese Exports of Sardine by Product Form and Volume, 1996-2000 (metric tons).**

Product form	1996	1997	1998	1999	2000
Fresh	-*	1	0**	0	-
Frozen	1,817	3,711	3,169	8,362	2,498
Canned:					
in tomato sauce	2,639	2,567	1,069	1,072	930
in water	192	26	28	15	5
other packs	52	5	5	2	8
Prepared/preserved	13	16	9	11	23
Total	4,713	6,326	4,280	9,462	3,464

-\* no exports

0\*\* more than zero but less than 0.5 metric tons

Source: Ministry of Finance 1997-2001

**Table 20. Japanese Exports of Sardine by Product Form and Value, 1996-2000 (U.S. \$1,000).**

Product form	1996	1997	1998	1999	2000
Fresh	-*	3	2	3	-
Frozen	1,686	2,587	2,395	5,367	1,929
Canned:					
in tomato sauce	7,516	6,975	3,116	3,207	2,980
in water	516	66	63	36	10
other packs	285	31	30	21	46
Prepared/preserved	170	242	111	174	229
Total	10,173	9,904	5,717	8,808	5,194

-\* no exports

Sources: Ministry of Finance 1997-2001

Japan Marine Products Importers Association 1997-2001

## COLD STORAGE HOLDINGS

Table 21 shows Japan's monthly and annual inventories of frozen sardines between 1995 and 2001. Monthly average inventory for 2000 was a record low, due to poor Japanese catches. Monthly inventories to June 2001 have been even lower.

**Table 21. Monthly and Annual Cold Storage Holdings of Frozen Sardines, 1995-2001 (metric tons).**

End of month	1995	1996	1997	1998	1999	2000	2001
January	28,853	33,743	44,929	27,588	35,670	44,966	24,079
February	35,985	51,724	43,198	27,569	47,404	42,383	23,206
March	45,604	50,148	39,157	32,218	47,925	40,381	24,499
April	40,316	50,472	34,463	35,088	44,274	37,234	22,237
May	38,478	47,301	32,808	35,740	47,618	35,432	21,773
June	43,373	40,427	40,215	35,975	55,947	29,003	26,056
July	49,618	35,772	42,309	34,345	65,945	26,184	
August	51,484	34,128	47,234	31,701	70,060	22,935	
September	49,283	32,233	46,205	26,056	63,071	19,947	
October	44,708	32,924	42,036	21,586	60,218	19,828	
November	35,601	36,530	35,696	23,656	47,417	17,673	
December	30,917	40,646	33,414	31,758	45,646	21,569	
Jan.-Dec.	494,220	486,045	481,664	363,280	631,195	357,535	
Monthly Average	41,185	40,504	40,139	30,273	52,600	29,795	

Sources: Ministry of Agriculture, Forestry and Fisheries,  
1997-2001  
Suisan Tsushin Sha 2000-2001

## SUPPLY

The annual supply of sardines for the Japanese market and for export is comprised of the cold storage inventory on January 1, plus domestic catches and imports. The annual supply reached a record high in 1988 due to sharply increased domestic catches (Table 22). Total annual supply steadily decreased from 1989 to 1998 because imports did not make up for decreased domestic catches. In 2000, however, sharply increased imports of sardine helped avert a large deficit in supply, as the catch was at a 28-year low.

Between 1996 and 2000, annual sardine supplies ranged between 205,000 and 390,000 mt, averaging 302,000 mt. During this period catches averaged 255,938 mt (about 85 percent of the total supply). The January inventory averaged 36,556 mt (12 percent), and imports 9,800 mt (3 percent). The percentage of the market supplied by imports increased from 1 percent in 1996 to 11 percent in 2000.

**Table 22. Japanese Annual Supply of Sardines, 1988-2000  
(metric tons).**

Year	Imports	Inventory (January 1)	Catch	Supply
1988	229	25,944	4,488,411	4,514,584
1989	273	37,749	4,098,989	4,128,011
1990	817	41,614	3,678,229	3,720,660
1991	628	46,342	3,010,498	3,057,468
1992	387	41,805	2,223,766	2,265,958
1993	609	67,427	1,713,687	1,781,713
1994	656	63,350	1,188,848	1,252,854
1995	8,354	30,285	661,391	700,030
1996	4,530	31,086	319,354	354,970
1997	5,137	40,654	284,054	329,845
1998	4,860	33,414	167,073	205,347
1999	9,318	31,758	351,207	392,283
2000	25,206	45,870	158,000	229,076

Sources: Ministry of Agriculture, Forestry and Fisheries,  
1990-2001  
Suisan Tsushin Sha 2000-2001  
Japan Marine Products Importers Association 1989-2001

## UTILIZATION

Sardines are used as fresh and processed food, as well as for bait, aquaculture feed, oil and meal for animal feed, and fertilizer (Table 23).

Most of the Japanese sardine harvest is used in aquaculture feed and for bait (Tables 23 and 24). The decline in sardine catch, however, caused changes in the utilization pattern. From 1995 to 2000, the quantity of sardine used for bait and aquaculture decreased from 325,000 mt to 61,000 mt. As a share of total landings, bait and aquaculture fell from 83 percent to 73 percent during the period.

Sardine meal is also used in feed for fish culture, as well as in animal feed, and fertilizer. The amount used for the production of fish meal and oil also decreased sharply from 14,000 mt to 1,000 mt for the period.

Sardine use in the fresh fish market is fairly stable compared to other product forms. Between 9,000 and 15,000 mt of the sardine landings were distributed to the fresh sardine market during 1995-2000. Fresh sardine is sold whole in retail stores for home consumption. It is prepared in various ways for the table by the Japanese. The most popular dish is broiled or grilled sardine which is consumed year round. Recently, some high quality fresh sardine and quick frozen sardine have been used as "sashimi", which typically consists of thin slices of raw seafood, at sushi restaurants as well as neighborhood restaurants. Sardine sashimi is also sold in supermarkets for home consumption (Hokkai Keizai Shinbun Sha September 15, 1999 and Suisan Keizai Sha August 1, 2001).

Sardine is also used in canned, dried, salted, or kneaded products. Salted-dried sardine, which is included under "other processed" products in Tables 23 and 24, is the most popular product among these processed foods. About 8,000 mt of sardine were used for "other processed" products in 2000.

**Table 23. Utilization of Japanese Sardine at 33 Major Landing Ports in Japan by Volume, 1995-2000 (metric tons)**

	1995	1996	1997	1998	1999	2000
Total landings from 33 ports	391,129	189,602	159,600	93,146	213,616	83,678
Human consumption:						
fresh	14,683	12,893	9,073	12,498	15,388	9,962
kneaded/minced	5,619	3,667	3,711	2,155	3,792	1,877
canned	3,543	4,600	1,184	2,578	4,810	1,727
other processed	28,961	14,724	8,886	5,425	16,017	7,664
Fish oil/ fish meal/	13,747	23,544	3,638	338	3,858	1,462
Fish bait/ aquaculture feed	324,576	130,174	133,108	70,152	169,751	60,986

Sources: Ministry of Agriculture, Forestry and Fisheries,  
1997-2001  
Suisan Tsushin Sha 2001

**Table 24. Utilization of Japanese Sardine at 33 Major Landing Ports in Japan by Share, 1995-2000 (percent)**

	1995	1996	1997	1998	1999	2000
Total landings from 33 ports	100	100	100	100	100	100
Human consumption:						
fresh	3.8	6.8	5.7	13.4	7.2	11.9
kneaded/minced	1.4	1.9	2.3	2.3	1.8	2.2
canned	0.9	2.4	0.7	2.8	2.2	2.1
other processed	7.4	7.8	5.6	5.8	7.5	9.2
Fish oil/ fish meal	3.5	12.4	2.3	0.4	1.8	1.8
Fish bait/ aquaculture feed	83.0	68.7	83.4	75.3	79.5	72.9

Sources: Ministry of Agriculture, Forestry and Fisheries,  
1997-2001  
Suisan Tsushin Sha 2001

## **WHOLESALE MARKET**

Sardine is usually sold through auction at consumer wholesale markets located in consumption areas, and at production wholesale markets located at Japanese ports of landings. Sardine is also sold directly to processors and representatives of supermarket chains. There are about 270 consumer and 340 production wholesale markets for fish in Japan (Suisan Sha 1993 and 1995). The largest consumer wholesale fish market is the Tokyo Central Wholesale Market. In 2000, this market handled about 723,000 mt of fishery products valued at about \$6.7 billion (Suisan Keizai Shinbun Sha February 6, 2001). It therefore plays an important role in providing indicators about supply and demand of fishery products in Japan. Wholesale prices at the Tokyo Central Wholesale Market also generally serve as price indices for fishery products throughout the world.

Wholesale prices for sardines vary widely, depending on quality, size of fish, origin, species, product form, supply and demand, and other factors.

### **Wholesale Prices at the Tokyo Central Wholesale Market**

Tables 25-28 show monthly and annual average wholesale prices and sales volume of sardines at the Tokyo Central Wholesale Market between 1991 and 2000. Wholesale prices for both fresh and frozen sardines showed fluctuations which were influenced mainly by availability of sardines, usually, the lower the supply, the higher the price.

The highest price for fresh sardine during this period was achieved in November 2000 at 779 yen/kg, when supply was lowest at 288 mt. With respect to frozen sardine, the highest price (597 yen/kg) occurred in February 1999, which also corresponded to a period of lower supply.

Size of fish is also an important determinant of price. Generally, larger fish command higher prices. Auction prices for fresh sardine at Tokyo Central Wholesale Market on September 6, 2001 were 1,000-2,000 yen/kg for "extra large (less than 30 fish in a 5-kg box)" sardine and 500-1,500 yen/kg for "large (30-40 fish in a 5-kg box)" sardine (Nikkan Shokuryo Shinbun Sha September 7, 2001).



**Table 25. Monthly and Annual Supply of Fresh Sardines at Tokyo Central Wholesale Market, 1991-2000 (metric tons).**

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
January	825	848	855	814	558	479	582	791	743	882
February	855	959	897	832	631	700	618	867	901	820
March	948	919	953	1,023	701	768	725	735	867	1,030
April	1,354	1,261	1,015	1,076	651	771	674	726	901	923
May	1,497	1,265	1,051	973	725	774	785	818	877	1,089
June	1,290	1,377	1,117	1,136	896	752	1,058	1,164	1,264	1,192
July	1,314	1,222	1,253	1,115	996	967	1,300	986	1,416	1,228
August	1,145	974	851	909	657	889	1,077	938	1,259	921
September	706	902	1,002	674	678	709	824	833	852	320
October	753	919	998	729	748	835	1,221	830	810	382
November	798	805	911	690	711	781	983	719	759	288
December	760	863	843	656	649	626	893	687	763	854
Total										
(Jan.-Dec.)	12,245	12,314	11,747	10,627	8,600	9,052	10,739	10,093	11,442	9,930

Total may not add due to rounding

Source: Tokyo Metropolitan Government 1992-2001

**Table 26. Annual and Monthly Average Wholesale Prices of Fresh Sardines at Tokyo Central Wholesale Market, 1991-2000 (yen/kg).**

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
January	222	195	161	184	322	532	593	463	382	370
February	253	229	234	245	307	371	569	423	368	454
March	280	315	308	279	343	391	507	656	415	383
April	228	272	248	217	321	446	551	534	366	368
May	211	228	244	241	282	397	465	487	412	316
June	240	256	276	211	265	507	321	400	321	353
July	270	234	246	220	273	463	285	460	320	376
August	264	268	291	244	421	433	285	405	311	429
September	438	310	217	328	427	469	477	431	439	748
October	420	313	249	320	338	481	289	463	449	743
November	305	308	283	272	394	421	349	462	462	779
December	240	228	212	219	404	450	356	403	389	338
Jan.-Dec.	270	261	248	244	337	445	393	461	377	412

Source: Tokyo Metropolitan Government 1992-2001

**Table 27. Monthly and Annual Supply of Frozen Sardines at Tokyo Central Wholesale Market, 1991-2000 (metric tons).**

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
January	18	15	4	11	5	9	8	11	15	12
February	13	24	6	5	6	8	14	16	8	15
March	16	15	5	7	6	9	6	35	24	10
April	15	12	6	5	5	10	7	51	11	80
May	34	30	5	7	14	13	11	10	12	31
June	25	8	11	38	14	13	10	13	10	42
July	21	3	8	8	9	6	8	9	11	13
August	33	694	18	17	12	22	4	6	27	13
September	33	11	6	5	9	19	11	6	13	44
October	32	11	8	7	12	9	8	9	8	21
November	28	5	8	5	10	9	6	18	12	66
December	29	5	6	3	9	6	8	8	16	122
Total										
(Jan.-Dec.)	297	832	92	116	110	133	101	193	168	470

Total may not add due to rounding

Source: Tokyo Metropolitan Government 1992-2001

**Table 28. Annual and Monthly Average Wholesale Prices of Frozen Sardines at Tokyo Central Wholesale Market, 1991-2000 (yen/kg).**

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
January	300	282	250	166	347	405	501	365	387	417
February	293	274	262	404	336	356	368	290	597	437
March	309	314	231	276	321	379	506	255	351	504
April	350	257	293	327	363	374	540	174	562	145
May	319	148	306	349	250	343	429	489	480	269
June	330	209	322	181	286	413	482	499	586	206
July	371	369	320	231	303	503	492	509	565	450
August	409	54	289	303	424	232	584	582	195	491
September	513	208	345	294	398	278	432	557	446	286
October	441	249	246	246	375	497	454	565	550	463
November	334	236	343	271	290	390	530	350	522	236
December	288	245	228	291	321	455	455	593	308	397
Jan.-Dec.	366	85	291	247	331	357	465	342	419	307

Source: Tokyo Metropolitan Government 1992-2001

## **Wholesale Prices at 10 Major Markets**

Tables 29 show annual average wholesale prices and supply of fresh sardine at 10 major central wholesale markets in Japan between 1991 and 2000. Annual average prices fluctuated considerably during that period, ranging from a low of 178 yen/kg to a high of 308 yen/kg, and as in Tokyo, the fluctuations were influenced mainly by volume of available supply.

Annual average exchange rates show that relative to the yen, the U.S. dollar depreciated over 20 percent from 1991 to 1999 (Appendix 2). Thus annual average wholesale prices of sardine at 10 major wholesale markets increased 46 percent in yen and 83 percent in dollars in 2000 over 1991 (Table 29).

## **Direct Sales to Supermarket Chains**

Huge national chains of supermarkets have become significant factors in marketing of food products. Many of these supermarkets maintain independent supply systems, dealing directly with producers, including those located overseas. Since these retailers typically deal in large quantities, they are able to buy directly from suppliers rather than from wholesale markets. Thus they represent a second avenue of sales for suppliers.

**Table 29. Annual Supply and Average Wholesale Prices of Fresh Sardines at 10 Major Central Wholesale Markets, 1991-2000.**

Year	supply	Yen/kg	\$/kg
1991	48,344	211	1.57
1992	49,256	198	1.56
1993	49,084	178	1.59
1994	43,823	192	1.87
1995	37,583	238	2.53
1996	38,611	294	2.71
1997	46,240	260	2.16
1998	41,418	300	2.28
1999	46,488	268	2.34
2000	36,675	308	2.87

Sources: Ministry of Agriculture, Forestry and Fisheries,  
1993-2001

Suisan Keizai Shinbun Sha February 19, 2001

Japan Marine Products Importers Association 1992-2001

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## **Appendix 1. Japanese Importers with Import Quotas for Sardine Products**

COMPANY: **Abekame Shoten Co., Ltd.**  
ADDRESS: 1-13-1 Shinhamacho, Shiogama, Miyagi, 985-0001 Japan  
CONTACT: Hitoshi Abe, President  
PHONE: 81-22-364-3377  
FAX: 81-22-364-3369

COMPANY: **Asahi Corporation**  
ADDRESS: 2-4 Ichirizuka, Nagaokakyo, Kyoto 617-0831 Japan  
CONTACT: Tanaka  
PHONE: 81-75-951-0521  
FAX: 81-75-951-0520

COMPANY: **Daimaru Kogyo Ltd., Agricultural & Marine Products Dept.**  
ADDRESS: 2-18-11 Kiba, Koto-ku, Tokyo 135-8510 Japan  
CONTACT: Haruji Fujimori  
PHONE: 81-3-3820-7123  
FAX: 81-3-3820-7089

COMPANY: **Daishin Gyogyo K.K.**  
ADDRESS: 1-3-9 Higashi-shimbashi, Minato-ku, Tokyo Japan

COMPANY: **Daitoh Trading Co., Ltd.**  
ADDRESS: 3-7-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-0013 Japan  
CONTACT: Kiyoshi Nakajima  
PHONE: 81-3-5512-2891  
FAX: 81-3-5512-2852

COMPANY: **Dosui, K.K.**  
ADDRESS: 27-5 Toyokawacho, Hakodate, Hokkaido 040 Japan  
CONTACT: Motohiro Takano  
PHONE: 81-138-22-7136  
FAX: 81-138-22-3777

COMPANY: **Eiko Boeki, K.K.**  
ADDRESS: 7-9-15 Matsumaedai, Moriyacho, Kitasoma-gun, Ibaraki Japan

COMPANY: **Fine Foods, K.K.**  
ADDRESS: Address: 2-14-2 Tsukiji, Chuo-ku, Tokyo Japan

COMPANY: **Fukumaru Suisan K.K.**  
ADDRESS: Mailing Address: 4-12 Hamamatsucho  
Ishinomaki, Miyagi Japan

COMPANY: **Fuso Trading, K.K.**  
 ADDRESS: 1-6-12-311 Minamikashiwa, Kashiwa, Chiba Japan

COMPANY: **Gulf Foods Co., ltd**  
 ADDRESS: Address: 7-17-7 Tsukij, Chuo-ku, Tokyo 104 Japan  
 CONTACT: Akemi Okubo  
 PHONE: 81-3-5565-3126  
 FAX: 81-3-5565-3127

COMPANY: **Hanwa Co., Ltd., Tokyo, Food Dept**  
 ADDRESS: 1-13-10 Tsukiji, Chuo-ku, Tokyo 104-8429 Japan  
 CONTACT: Kazuo Yokota  
 PHONE: 81-3-3544-2323  
 FAX: 81-3-3544-2050

COMPANY: **Hoko Fishing Co., Ltd.**  
 ADDRESS: 1-2-4 Tsukiji, Chuo-ku, Tokyo 104-0045 Japan  
 CONTACT: Shigeyuki Sanjo  
 PHONE: 81-3-3542-5421  
 FAX: 81-3-3545-2167

COMPANY: **Ito Shoten, K.K. (Chiba)**  
 ADDRESS: Address: Ha-2801, Asahi, Chiba Japan

COMPANY: **Kaisei Marine Products, Inc**  
 ADDRESS: 1-2-3 Higashi-yamatocho, Shimonoseki,  
 Yamaguchi 750Japan  
 CONTACT: Masatake Miyazaki  
 PHONE: 81-832-67-8541  
 FAX: 81-832-67-7701

COMPANY: **Kanehide Shoji**  
 ADDRESS: 1228 Onaha, Nishihara-cho, Naha, Okinawa Japan  
 CONTACT: 1. K. Nakai

COMPANY: **Kashima Kimura Reizo K.K.**  
 ADDRESS: 3002-62 Oaza-ohta, Hazakicho  
 Kashima-gun, Ibaraki 314-0254 Japan  
 CONTACT: Shioi  
 PHONE: 81-479-46-3130  
 FAX: 81-479-46-3135

COMPANY: **Kashiwa Gyorui K.K.**  
 ADDRESS: 85 Wakashiba, Kashiwa, Chiba Japan

COMPANY: **Kawasho Corporation, Foodstuff Dept.**  
 ADDRESS: 2-7-1 Otemachi, Chiyoda-ku, Tokyo 100-0004 Japan  
 CONTACT: Yuji Fujimura  
 PHONE: 81-3-5203-5232  
 FAX: 81-3-5203-5386

COMPANY: **Kita Borneo Suisan K.K.**  
 ADDRESS: 4-4-8 Tsukiji, Chuo-ku, Tokyo Japan

COMPANY: **Kohyo Co., Ltd.**  
 ADDRESS: 5-4-19 Shinsei, Yokkaichi-shi, Mie 510-0064 Japan  
 CONTACT: Yutaka Miwa  
 PHONE: 81-593-54-5411  
 FAX: 81-593-54-3447

COMPANY: **Kyodo Agri-Marine MFG. Ltd.**  
 ADDRESS: 940 Gushikawa, Gushikawa, Okinawa 904-2223 Japan  
 CONTACT: 940 Gushikawa  
 PHONE: 81-98-974-3133  
 FAX: 81-98-974-3133

COMPANY: **Mack, K.K.**  
 ADDRESS: 2-4-4 Shintomi, Chuo-ku, Tokyo Japan

COMPANY: **Maehama Co., Ltd.**  
 ADDRESS: 4-7-8 Ohgimachi, Miyagino-ku, Sendai,  
 Miyagi 983-0034 Japan  
 CONTACT: Haedong Shin  
 PHONE: 81-22-238-1711  
 FAX: 81-22-239-3988

COMPANY: **Maruha Corporation**  
 ADDRESS: Mailing Address: 1-1-2 Otemachi, Chiyoda-ku,  
 Tokyo 100-0004Japan  
 CONTACT: Fumito Kawa  
 PHONE: 81-3-3216-0269  
 FAX: 81-3-3216-0269

COMPANY: **Maruwazu Trading Co., Ltd.**  
 ADDRESS: 2-1-8 Shinmeicho-higashi, Sakai-shi  
 Osaka, Osaka 590 Japan  
 CONTACT: Nakayama  
 PHONE: 81-722-33-6321  
 FAX: 81-722-33-6322

COMPANY: **Matsuoka Co., Ltd.**  
 ADDRESS: 1-10-12, Higashi-yamatomachi  
 Shimonoseki, Yamaguchi 750-8512 Japan  
 FAX: 81-832-67-5286

COMPANY: **Matsuwa Shoji K.K.**  
 ADDRESS: 1-1 Isonochō, Hyogo-ku, Kobe, Hyogo Japan

COMPANY: **Mitsubishi Corporation, Marine Products Dept**  
 ADDRESS: 2-3-1 Marunouchi, Chiyoda-ku, Tokyo 100-0005 Japan  
 FAX: 81-3-3210-6726

COMPANY: **Mover, K.K.**  
 ADDRESS: 5-4-6 Nishikasai, Edogawa-ku, Tokyo Japan

COMPANY: **Nakano Suisan, K.K.**  
 ADDRESS: 7-15-2 Tsukiji, Chuo-ku, Tokyo Japan

COMPANY: **Nichimo Co., Ltd., Food Business Department**  
 ADDRESS: Tennozu Yusen Bldg., 2-2-20 Higashi-shinagawa  
 Shinagawa-ku, Tokyo 140-0002 Japan  
 CONTACT: Katsuyasu Ito  
 PHONE: 81-3-3458-3020  
 FAX: 81-3-3458-4963

COMPANY: **Nichiro Corporation**  
 ADDRESS: 1-12-1 Yurakucho, Chiyoda-ku, Tokyo 100-0006 Japan  
 CONTACT: Hidetaka Ochi  
 PHONE: 81-3-3240-6320  
 FAX: 81-3-3287-2326

CONTACT: **Niigata Reizo K.K.**  
 ADDRESS: 4-3776 Irifunecho-dori, Niigata, Niigata 950 Japan  
 CONTACT: Kunihiro Nakada  
 PHONE: 81-25-246-7001  
 FAX: 81-25-246-7046

COMPANY: **Nomura Trading Co., Ltd., Tokyo Marine Prod. Dept.**  
 ADDRESS: 1-7-8 Higashi-kanda, Chiyoda-ku, Tokyo 101-0031 Japan  
 FAX: 81-3-5821-1258

COMPANY: **Ogura Boeki K.K.**  
 ADDRESS: 3-4-4 Nihonbashi-muromachi, Chuo-ku, Tokyo Japan

COMPANY: **Okinawa Free Zone Foods, K.K.**  
 ADDRESS: Bldg. 1, Okinawa Free Trade Zone, Kagami-mizusakihara  
 Jisaki, Naha, Okinawa Japan

COMPANY: **Plateau Co., Ltd.**  
 ADDRESS: Dogyoren Bldg. 6F, 7-13-5 Tsukiji, Chuo-ku, Tokyo, 104 Japan  
 CONTACT: Genya Yoshida  
 PHONE: 81-3-3543-8808  
 FAX: 81-3-3545-9846

COMPANY: **SCL, K.K.**  
 ADDRESS: 1-26-4 Minamidai, Seya-ku, Yokohama, Kanagawa Japan

COMPANY: **Shin Nihon Global Inc.**  
 ADDRESS: SK Bldg. 3F, 1-13-19 Shintomi, Chuo-ku, Tokyo 104-0041Japan  
 CONTACT: Yoshihiko Kuroda  
 PHONE: 81-3-3555-3605  
 FAX: 81-3-3555-3601

COMPANY: **Shinto Corporation (Shinto Bussan K.K.)**  
 ADDRESS: 2-14-8 Tsukiji, Chuo-ku, Tokyo 104Japan  
 CONTACT: H. Tsuchikane  
 PHONE: 81-3-3546-1281  
 FAX: 81-3-3546-1277

COMPANY: **Soura Kanzume K.K.**  
 ADDRESS: 986 Ogatacho, Sasebo, Nagasaki Japan

COMPANY: **Sumikin Bussan Kaisha, Ltd., Food Products Dept.**  
 ADDRESS: 8-5-27 Akasaka, Minato-ku, Tokyo 107-0052 Japan  
 FAX: 81-3-5412-5178

COMPANY: **Sunland Corp.**  
 ADDRESS: Kitaguchi Saito Bldg., 5-6-20 Honcho, Funabashi, Chiba 273-0005Japan  
 CONTACT: Akiyoshi Okubo  
 PHONE: 81-47-460-2080  
 FAX: 81-47-460-2099

COMPANY: **Tairyo Enterprises, K.K.**  
 ADDRESS: 1-13-7 Uchikanda, Chiyoda-ku, Tokyo Japan  
 CONTACT: Noboru Ishimori  
 PHONE: 81-3294-3006  
 FAX: 81-3294-3005

COMPANY: **Takeichi & Co., Ltd.**  
ADDRESS: Shuwa No. 3 Kayabacho Bldg., 3-12-6,  
Nihonbashi-kayabacho, Chuo-ku, Tokyo 103-0025 Japan  
CONTACT: Hiromi Kawada  
PHONE: 81-3-3669-9252  
FAX: 81-3-3669-3540

COMPANY: **Takuto Tsusho**  
ADDRESS: 757-49 Ishihata, Mizuho-cho  
Nishitama-gun, Tokyo Japan

COMPANY: **Times, K.K.**  
ADDRESS: 2-14-5 Shintomi  
Chuo-ku, Tokyo Japan

COMPANY: **Toka Boeki K.K.**  
ADDRESS: 11-26 Higashidacho, Kawasaki-ku, Kawasaki,  
Kanagawa Japan

COMPANY: **Tokai Denpun Co., Ltd.**  
ADDRESS: 24-15 Tenmachi, Shizuoka-shi, Shizuoka Japan  
CONTACT: Etsuro Uematsu  
PHONE: 81-54-253-1181  
FAX: 81-54-251-3524 CONTACT:

COMPANY: **Tokan Boeki K.K.**  
ADDRESS: 4-5-6 Akasaka, Minato-ku, Tokyo Japan

COMPANY: **Tokyo Commercial Co., Ltd.**  
ADDRESS: 8-15 Toyomichi, Chuo-ku, Tokyo 104-0055 Japan  
CONTACT: Kosuke Sakai  
PHONE: 81-3-3534-1301  
FAX: 81-3-3532-9420

COMPANY: **Towa Shokuhin K.K.**  
ADDRESS: 3-2-1, Higashi 3-jo kita, Nishi-shoro, Shiranuka-cho  
Shiranuka-gun, Hokkaido Japan

COMPANY: **Trans Ocean Ltd.**  
ADDRESS: 3-3-3-702 Tsukuda, Chuo-ku, Tokyo 104-0051 Japan  
CONTACT: Etsuko Uozumi  
PHONE: 81-3-5548-2672  
FAX: 81-3-5548-2673

COMPANY: **Tri Marine Japan K.K.**  
ADDRESS: 1-7-25 Kojimachi, Chiyoda-ku, Tokyo Japan



COMPANY: **Tsujino and Co., Ltd.**

ADDRESS: Tsukiji Mitsui Bldg. 3F, 4-7-1 Tsukiji, Chuo-ku,  
Tokyo 104Japan

CONTACT: Tadaaki Sumita

PHONE: 81-3-3545-2501

FAX: 81-3-5565-0947

COMPANY: **Unique Trading K.K.**

ADDRESS: 2-1-16 Tsukiji, Chuo-ku, Tokyo Japan

COMPANY: **Yokohama Reito K.K.**

ADDRESS: 1-1-7 Moriyacho, Kanagawa-ku, Yokohama, Kanagawa Japan

COMPANY: **Zensho Koeki K.K.**

ADDRESS: 1-30-20 Matsuyama, Naha, Okinawa Japan

COMPANY: **Zensui Co., Ltd.**

ADDRESS: 1-10-3 Ginza, Chuo-ku, Tokyo 104 Japan

CONTACT: Takahashi

PHONE: 81-3-5250-2411

FAX: 81-3-5250-2415

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The U.S. Embassy Tokyo, USFCS Tokyo and the National Marine  
Fisheries Service cannot be responsible for the accuracy of this  
information nor do they endorse any companies listed herein.  
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Source: U.S. Embassy, Fisheries Commercial Service Section,  
Tokyo, Japan 2001

**Appendix 2. Monthly and Annual Average Exchange Rate Applied to Japanese Imports, 1976-2000 (yen/U.S. \$1.00).**

Month	1976	1977	1978	1979	1980	1981	1982
Jan.	305.50	292.64	240.73	195.98	237.68	203.99	221.36
Feb.	302.84	288.41	241.46	199.16	240.35	203.44	231.15
Mar.	301.50	282.49	236.94	203.39	247.44	207.80	237.03
Apr.	299.30	275.91	222.99	210.87	252.39	211.99	246.01
May	299.00	277.66	225.36	217.81	238.71	217.18	237.25
June	299.83	275.79	222.54	219.83	221.44	223.89	243.66
July	296.89	267.78	205.17	217.24	217.95	226.55	256.07
Aug.	292.81	265.70	191.18	216.13	224.85	236.35	257.18
Sept.	288.18	267.14	190.94	220.54	219.10	230.26	258.60
Oct.	288.43	261.78	187.76	225.41	210.18	229.15	268.14
Nov.	294.12	249.13	184.41	238.48	211.28	230.56	272.81
Dec.	295.68	241.87	196.54	244.62	212.85	218.15	250.33
Jan.-Dec.	296.92	270.53	212.17	217.46	227.85	219.94	248.30

Month	1983	1984	1985	1986	1987	1988	1989
Jan.	232.89	233.83	252.04	202.07	159.01	126.01	125.64
Feb.	237.03	233.98	256.66	193.53	152.70	128.57	128.49
Mar.	235.99	228.79	260.53	180.21	153.47	128.72	128.00
Apr.	238.61	225.10	254.49	178.62	146.97	125.64	132.12
May	235.43	227.48	251.36	167.08	139.91	124.76	133.78
June	238.48	231.56	250.26	169.29	142.58	125.23	143.06
July	239.93	238.69	246.22	163.17	147.81	131.40	141.60
Aug.	242.70	243.69	237.92	155.04	150.83	133.12	140.29
Sept.	244.80	243.02	239.20	154.66	143.02	134.21	145.10
Oct.	236.15	246.68	221.43	154.23	144.59	132.58	142.58
Nov.	234.22	244.08	209.32	160.34	138.52	125.36	142.67
Dec.	234.81	246.07	202.60	162.73	132.65	122.21	143.83
Jan.-Dec.	237.59	236.91	240.17	170.08	146.01	128.15	137.26

**Appendix 2 (Continued). Monthly and Annual Average Exchange Rate  
Applied to Japanese Imports, 1976-2000  
(yen/U.S. \$1.00).**

Month	1990	1991	1992	1993	1994	1995	1996
Jan.	144.36	135.27	126.21	124.66	111.79	100.25	104.49
Feb.	144.93	130.97	125.47	123.98	109.23	99.19	106.38
Mar.	148.61	134.02	130.46	117.95	105.04	94.49	105.32
Apr.	156.99	137.68	133.37	115.05	104.47	86.99	107.07
May	157.09	137.71	132.77	110.81	103.07	83.75	106.02
June	159.28	139.05	128.15	107.97	104.29	84.96	108.19
July	151.95	138.85	125.61	108.16	99.55	85.46	109.55
Aug.	148.90	137.00	126.99	105.38	99.57	90.73	107.84
Sept.	142.96	136.24	124.36	104.37	99.25	98.48	108.78
Oct.	133.82	131.72	121.03	105.79	98.97	100.88	110.99
Nov.	128.31	130.47	122.71	107.80	97.41	101.56	112.86
Dec.	130.86	129.14	124.11	108.35	99.22	101.51	112.70
Jan.-Dec.	145.67	134.84	126.77	111.69	102.66	94.02	108.35

Month	1997	1998	1999	2000
Jan.	115.60	130.98	114.09	103.76
Feb.	121.26	125.90	115.02	107.05
Mar.	122.38	127.35	119.88	108.29
Apr.	124.29	130.84	119.55	106.02
May	123.99	132.33	120.21	107.38
June	114.98	138.65	121.52	108.36
July	114.08	140.47	121.56	106.34
Aug.	117.18	143.44	115.95	108.70
Sept.	119.44	138.58	110.21	106.71
Oct.	121.18	129.32	106.34	107.88
Nov.	122.27	118.14	105.21	108.14
Dec.	127.90	120.26	103.73	110.67
Jan.-Dec.	120.38	131.36	114.44	107.44

Sources: Japan Marine Products Importers Association 1977-2001